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PROGRAM

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Third Session

OF THE

GRADUATE SCHOOL OF AGRICULTURE

CORNELL UNIVERSITY

ITHACA, NEW YORK

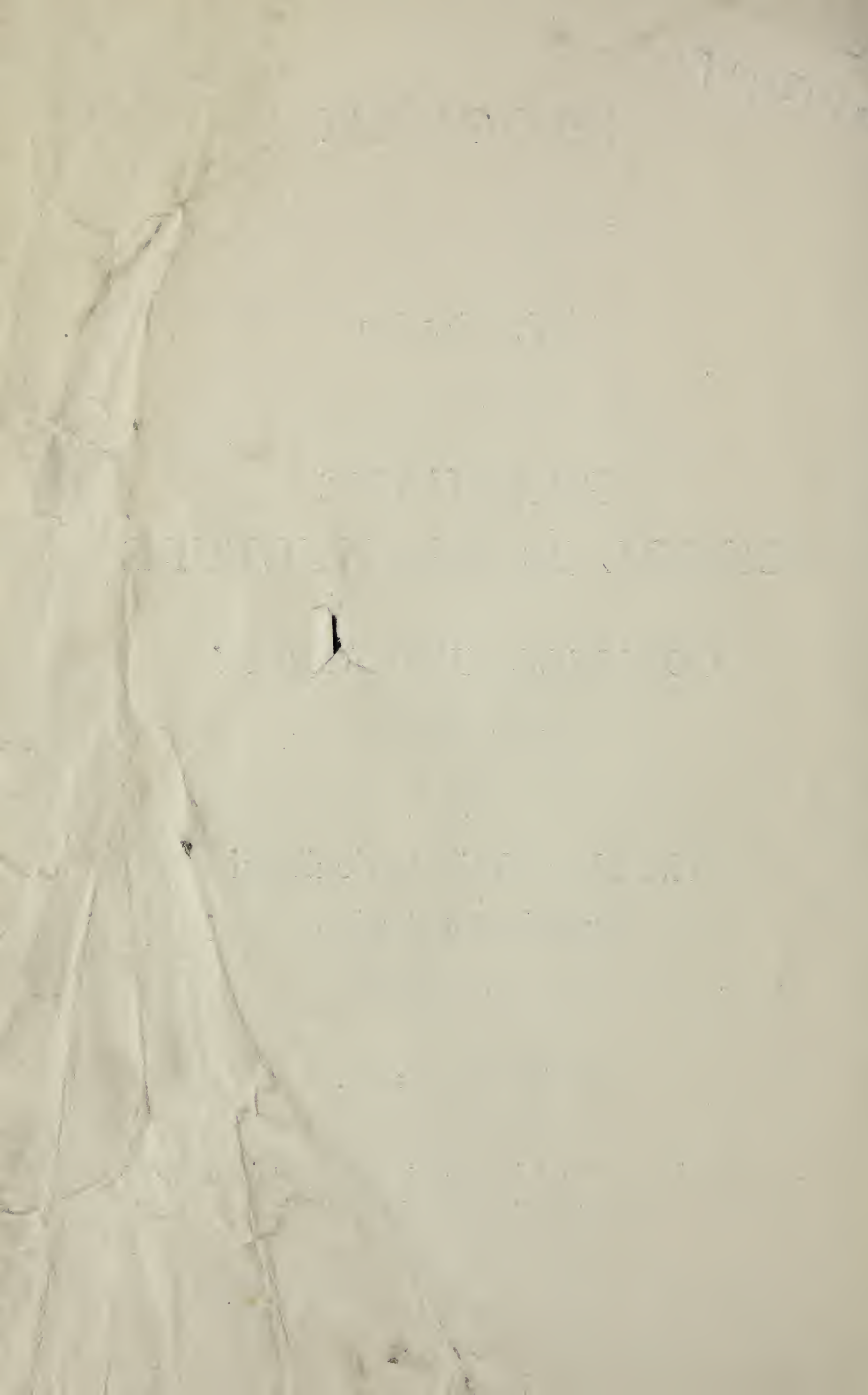
AND

The New York Agricultural
Experiment Station,

GENEVA, NEW YORK

JULY 6-31, 1908.

UNDER THE AUSPICES OF THE ASSOCIATION OF AMERICAN AGRICULTURAL
COLLEGES AND EXPERIMENT STATIONS.



**TOPICS TO BE PRESENTED BY THE SEVERAL INSTRUCTORS
AND SCHEDULES OF THE SEQUENCE OF LECTURES,
SEMINARS AND OTHER EXERCISES.**

BIOCHEMISTRY.

H. P. ARMSBY, Ph.D.

Selected chapters in stock feeding. Five lectures.

C. F. LANGWORTHY, Ph.D.

Physiological chemistry in relation to animal nutrition.

L. B. MENDEL, Ph. D.

Recent progress in the chemistry of the proteins, and its relation to the problems of nutrition.

The chemical processes of the alimentary tract.

Intermediary Metabolism: Some aspects of the intermediary metabolism of nucleoproteins and purines; the intermediary metabolism of the carbohydrates; biochemical functions and protective mechanisms. Three lectures.

A. L. WINTON, Ph.D.

Microscopical methods for detecting adulterations in feeding stuffs. Five lectures.

N. ZUNTZ, Ph. D.

Aims and methods of research regarding the respiratory process. Two lectures.

The muscular action, its different forms and its influence on the quantity and quality of metabolism.

The different forms of internal labor performed by the resting organism and their influence on metabolism.

Influence of internal and external temperature on metabolism.

SCHEDULE

Lecture Hours	First Week July 6-10	Second Week July 13-17	Third Week July 20-24	Fourth Week July 27-31
9:30-10:30 A. M.	Dr. Langworthy Monday.			
	Dr. Winton Tuesday Wednesday Thursday Friday	Dr. Mendel	Dr. Armsby	Dr. Zuntz
Seminars 3-5 P. M.	Dr. Winton Tuesday Thursday	Dr. Mendel Tuesday Thursday	Dr. Armsby Tuesday Thursday	Dr. Zuntz Tuesday Thursday

AGRONOMY.

- M. A. CARLETON, M.S.
Rate of seeding.
Mixed crops.
- C. G. ELLIOTT, C.E.
Drainage of land for agriculture.
- R. A. EMERSON, B.S.
Latent factors in heredity.
- S. FORTIER, Sc.D.
The arid region of the United States and its irrigation problems.
Typical irrigation structures for the storage diversion and conveyance of water.
The use of water in irrigation.
- A. D. HALL, M.A., (Oxon.)
Special effect of fertilizers upon the character and composition of the crop.
Special effect of fertilizers upon the reaction and texture of the soil.
General discussion of the theory of fertilizers in relation to the soil and the plant.
- H. A. HARDING, M.S.
Equipment of the investigator and his point of view.
Growth of our knowledge of the bacteria in the soil. Early determinations of nitrification and symbiotic fixation.
Results and problems in symbiotic fixation.
Nitrification, its problems and methods for their study.
Denitrification. General relations of soil organisms to problems of fertility.
- T. L. LYON, Ph.D.
Methods of instruction and experimentation in field crops.
Five lectures.
- E. G. MONTGOMERY, B. S.
Methods of instruction and experimentation in field crops.
Five lectures.
- J. B. NORTON, M. S.
Color inheritance.
- W. J. SPILLMAN, M.S.
Outlines of a course of lectures on farm management for college students. Three lectures.

H. J. WEBBER, Ph.D.

Mutations, their nature, production and use in breeding.

Is there a cumulative action in artificial or natural selection?

Clonal or bud variations, their meaning and use in breeding.

OSWALD SCHREINER, Ph.D.

Constitution of soils.

The analytical examination of soils.

The soil solution and the minerals of the soil.

Causes of infertility in soils.

The role of manures in maintaining soil fertility.

SCHEDULE

Lecture Hours	First Week July 6-10	Second Week July 13-17	Third Week July 20-24	Fourth Week July 27-31
8-9 A. M.	Dr. Lyon	Director Hall	Dr. Schreiner	Prof. Spillman Monday Tuesday Wednesday Mr. Carleton Thursday Friday
11-12 A. M.	Dr. Webber Monday Tuesday Wednesday Prof. Norton Thursday Prof. Emerson Friday	Prof. Montgomery	Mr. Harding	Dr. Fortier Monday Tuesday Mr. Elliott Wednesday Thursday Friday
Seminars 3-5 P. M.	Dr. Lyon Monday Dr. Webber Wednesday Friday	Director Hall Monday Prof. Montgomery Wednesday Friday	Dr. Schreiner Monday Wednesday Mr. Harding Friday	Dr. Fortier Monday Prof. Spillman Wednesday Mr. Carleton Friday

HORTICULTURE AND PLANT PHYSIOLOGY.

S. A. BEACH, M.S.

Breeding the apple and the grape. Development, present status, possibilities, materials and methods. Five lectures.

L. J. BRIGGS, Ph.D.

Measurement of environmental factors in relation to plant growth.

Evaporation and its relation to other climatic factors.

The influence of water vapor on the solar energy received on the earth's surface.

The moisture equivalent of soils.

The influence of acid or alkaline soil reactions on the development of fungous diseases in plants.

Three lectures.

B. M. DUGGAR, Ph.D.

Plant nutrition and the relations of potassium, sodium, magnesium and calcium.

Nitrogen accumulation through fungi.

The relations of plants to toxic organic substances.

The ecological method in economic studies.

The bearing of recent nuclear studies on the theory of heredity.

U. P. HEDRICK, M.S.

American viticulture: History, present status, botany, varieties and improvement of American grapes. Five lectures.

L. B. JUDSON, B.S.

Effect of acetylene light on plant growth.

Truck gardening on Long Island.

The etherization of plants.

G. H. POWELL, M.S.

Fruit storage and transportation investigations. Four lectures.

Coöperation in fruit marketing.

W. T. SWINGLE, M.S.

Scope and methods of plant life history investigations illustrated by recent work on the date palm and alfalfa.

The law of the limiting factor in relation to variety testing and plant breeding.

F. A. WAUGH, M.S.

Landscape gardening. Five lectures.

J. C. WHITTEN, Ph.D.

Observations upon the comparative hardiness and phenology of trees from northern and southern sources.

Investigations of the dormant period in its relation to hardiness and phenology.

The relation of color to hardiness and phenology.

Some observations upon the effect of the application of potash to the hardiness of plants.

Observations upon the relation of certain cultural methods to hardiness.

C. S. WILSON, M.S.A.

The orchard survey of New York state.

Some phases of grape growing in New York state.

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8-9 A. M.	Prof. Beach	Prof. Judson Monday Tuesday Wednesday Prof. Wilson Thursday Friday	Prof. Waugh	Dr. Whitten
11-12 A. M.	Dr. Briggs Monday Tuesday Wednesday Mr. Swingle Thursday Friday	Dr. Duggar	Prof. Hedrick	Mr. Powell
Seminars 3-5 P. M.	Dr. Briggs Monday Prof. Beach Wednesday Mr. Swingle Friday	Prof. Judson Monday Dr. Duggar Wednesday Prof. Wilson Friday	Prof. Waugh Monday Wednesday Prof. Hedrick Friday	Dr. Whitten Monday Mr. Powell Wednesday Friday

DAIRY HUSBANDRY AND DAIRYING.

GEO. W. CAVANAUGH, B.S.

Dried milk preparations. Two lectures.

E. DAVENPORT, LL.D.

Variability in cows.

Influence of age upon milk production.

Transmission of the milking quality.

Difficulties in drawing conclusions from exposition breed tests.

Selection for utility.

T. L. HAECKER.

The food of maintenance, variations and cause.

Nutrient requirements in milk production.

(a) The composition of milk.

(b) The relation of digestible nutrients to milk solids produced.

(c) Feeding standard for milk production.

Nutrient requirements in meat production.

W. H. JORDAN, Sc.D.

Nutrition of dairy cow. Five lectures.

C. E. LEE, B.S.

The Babcock and other tests used in butter making:

Creamery methods.

R. A. PEARSON, M.S.Agr.

Modified milk.

L. A. ROGERS, B.S.

Butter flavors.

H. L. RUSSELL, Ph.D.

Conditions affecting distribution of bacteria.

Standards of milk examination and their significance. Two lectures.

General survey of recent progress in dairy bacteriology and general resumé of research work on this subject, with suggestions as to possible lines of future development.

Methods of teaching.

W. A. STOCKING, JR., M.S.A.

Fermented milk beverages. Two lectures.

L. L. VAN SLYKE, Ph.D.

The chemistry of milk in some of its relations to cheese. Two lectures.

Progress in methods of making and curing cheese.

Theories of cheese ripening.

Methods of dairy investigation.

E. H. WEBSTER, M.S.

Development in the courses of instruction given for butter makers.

Creamery records and accounting.

H. H. WING, M.S.Agr.

Relation of form to function (dairy score cards).

Age and lactation as factors in milk production.

Influence of body fat in making records.

Influence of advanced registry on percentage of fat in milk.

History of the development of a family of cows.

SCHEDULE

Lecture Hours	First Week July 6-10	Second Week July 13-17	Third Week July 20-24	Fourth Week July 27-31
8-9 A. M.	Dean Davenport	Dr. Jordan	Prof. Hæcker	Prof. Wing
	Prof. Cavanaugh Monday Tuesday		Mr. Webster Monday	
11-12 A. M.	Prof. Stocking Wednesday Thursday	Dean Russell	Prof. Lee Tuesday Wednesday	Dr. VanSlyke
	Com'r. Pearson Friday		Mr. Webster Thursday	
			Mr. Rogers Friday	
Seminars	Dean Davenport Monday	Dr. Jordan Monday	Prof. Hæcker Monday	Prof. Wing Monday
	Prof. Cavanaugh Wednesday	Dean Russell Wednesday Friday	Dr. Thom Wednesday	Dr. Van Slyke Wednesday
3-5 P. M.	Prof. Stocking Friday		Prof. Lee Friday	Friday

POULTRY HUSBANDRY.

C. B. DAVENPORT, Ph.D.

Origin of domestic fowl.

Characteristics of poultry.

General principles of heredity.

Application of principles of heredity to the breeding of poultry.

Two lectures.

P.A. FISH, Sc.D., D.V.M.

The digestive organs in poultry.

Digestion and nutrition in poultry.

S. H. GAGE, B.S.

General discussion of the subject of reproduction: Origin and character of the male and female germinal cells; fertilization and segmentation.

The growth of the hen's egg and the deposition of fat as shown by feeding Sudan III.

Structure of the oviduct in various stages of activity and the formation of the albumen, the shell membranes and the shell; double yolked eggs, eggs with two shells.

Formation of the germ layers, the tissue and organs.

Formation of the fetal membranes and the organs of sense.

Monstrosities.

Wm. R. GRAHAM, B.S.Agr.

Recent developments in methods of incubation.

G. S. HOPKINS, Sc.D., D.V.M.

Some points on the comparative anatomy of poultry. Two lectures.

J. E. RICE, B.S.Agr.

Sequence in plumage and conditions influencing feather development in the domestic fowl.

The function of grit and the importance of ash in the feeding of poultry.

Vitality of the breeding stock as a factor in the successful handling of poultry.

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Lecture Hours	First Week July 6-10	Second-Week July 13-17	Third Week July 20-24	Fourth Week July 27-31
11-12 A. M.	Prof. Gage	Dr. Hopkins Monday Tuesday Dr. Fish Wednesday Thursday Prof. Rice Friday	Dr. Davenport	Prof. Graham Monday Tuesday Wednesday Prof. Rice Thursday Friday
Seminars 3-5 P. M.	Prof. Gage Wednesday	Dr. Fish Wednesday	Dr. Davenport Wednesday	Prof. Graham Wednesday Prof. Rice Friday

VETERINARY MEDICINE.

J. W. CONNAWAY, D.V.S., M.D.

Texas fever and inoculation against same.

Practical demonstrations on methods and lines for further research. Three lectures.

Infectious diseases of swine.

JAMES LAW, F.R.C.V.S.

Parasites and Parasitism

1. Definitions. Divisions of parasites. Parasitic habit and effects, etc. Parasitic plants.
2. Parasitic diptera.
3. Ticks and mites, etc.
4. Cestodes, trematodes and acanthocephali.
5. Round worms.

V. A. MOORE, B.S., M.D.

Methods of infection and the nature of infectious diseases.

Differential diagnosis with special reference to infectious diseases of animals.

The nature, channels of infection and dissemination of animal tuberculosis.

A consideration of some fundamental principles in the production of immunity.

The diagnosis and control of bovine tuberculosis.

W. L. WILLIAMS, V.S.

Hereditary diseases and defects.

Accidents and infections of coition.

Sterility.

Hygiene of pregnant animals.

Hygiene of the new-born.

SCHEDULE

Lecture Hours	First Week July 6-10	Second Week July 13-17	Third Week July 20-24	Fourth Week July 27-31
2-3 P. M.	Dean Law	Dr. Moore	Dr. Connaway	Prof. Williams
Seminars	Dean Law Tuesday Thursday	Dr. Moore Tuesday Thursday	Dr. Connaway Tuesday Thursday	Prof. Williams Tuesday Thursday
3-5 P. M.				

ENTOMOLOGY.

E. P. FELT, Sc.D.

The work and systems in the office of the State Entomologist.

S. A. FORBES, Ph.D.

The science and art of economic entomology as illustrated by a critical review of the work on the principal insects injurious to Indian corn.

The subjects used will be

- (1) The Northern corn root worm (*Diabrotica longicornis* say) and the Southern corn root worm (*D. 12-punctata* Oliv.).
- (2) The Aphids of the corn plant (*Aphis maidi-radidis* Forbes, *A. Maidis* Fitch, and *Sipha flava* Forbes.
- (3) The common white-grubs (*Lachnosterna* and *Cyclocephala* spp.);
- (4) The chinch-bug (*Blissus leucopierus* Say);
- (5) A miscellaneous series selected because of their availability as illustrations of method.

A. D. HOPKINS, Ph.D.

Work of the Bureau of Entomology against forest insects.

L. O. HOWARD, Ph.D.

Recent developments in the practical handling of beneficial parasitic insects.

The present condition of Economic Entomology.

A. D. MACGILLIVRAY, Ph.D.

Methods and aids in entomological instruction.

J. G. NEEDHAM, Ph.D.

What shall be done with the marshes.

P. J. PARROTT, A.M.

Methods in planning and conducting cooperative experiments.

Two lectures.

A. L. QUAINANCE, M.S.

Deciduous fruit investigation of the Bureau of Entomology.

W. A. RILEY, Ph.D.

Methods and aids in entomological instruction.

E. D. SANDERSON, B.S.Agr.

Publications of the State Entomologist.

Methods of studying the codling-moth.

M. V. SLINGERLAND, B.S.Agr.

Insect photography. Two lectures.

F. M. WEBSTER, M.S.

Investigations of insects injurious to grain and forage crops by the Bureau of Entomology.

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Lecture Hours	First Week July 6-10	Second Week July 13-17	Third Week July 20-24	Fourth Week July 27-31
9:30-10:30 A. M.	Dr. Howard Monday Tuesday	Prof. Parrott Monday Tuesday	Dr. Forbes	Prof. Slingerland Monday
	Prof. Quaintance Wednesday	Prof. Sanderson Wednesday Thursday		Dr. Needham Tuesday
	Dr. Hopkins Thursday			Dr. Riley Wednesday
	Mr. Webster Friday	Dr. Felt Friday		Dr. MacGillivray Thursday
Seminars 3-5 P. M.	Dr. Howard Tuesday	Prof. Parrott Tuesday	Dr. Forbes Tuesday Thursday	Prof. Slingerland Tuesday
	Dr. Hopkins Thursday	Prof. Sanderson Thursday		Drs. Riley and MacGillivray Thursday

SATURDAY AND EVENING EXERCISES AT GRADUATE SCHOOL OF AGRICULTURE, 1908.

SATURDAY EXERCISES.

First Week—July 11 9–11 A. M.	Second Week July 18	Third Week—July 25 9–11 A. M.	Fourth Week Aug. 1
Pedagogics of Agriculture. Dean Hunt Dean J. E. Russell (of Teachers College, Columbia University)	Excursion to Geneva	Agriculture in Secondary Schools Assistant Secretary of Agriculture Hays. U. S. Commissioner of Education Brown. Dr. Warren	Excursion

EVENING EXERCISES.

First Week	Second Week	Third Week	Fourth Week
Wednesday, July 8, Public Opening Exercises Hon. James Wilson Dr. H. C. White Pres. Schurman Director Bailey Director Jordan Dean True	Wednesday, July 15, Defence Work of Agricultural Experiment Stations Director Jenkins Director Jordan	Wednesday, July 22, Editing of Station Publications. Assistant Director Allen Mr. F. H. Hall	Wednesday, July 29, Elementary In- struction in Agri- culture. Dr. J. W. Robertson Mr. D. J. Crosby
Friday, July 10, Reception at Direc- tor Bailey's.	Friday, July 17 Extension Work in Agriculture. Pres. Butterfield Pres. Creelman Prof. Hamilton Prof. Tuck	Friday, July 24. Meeting with Lazy Club—Subject— Student Organiza- tions. Director Bailey	Friday, July 31, Rural Economy. Director Bailey Prof. Lauman Prof. H. C. Taylor

A. C. TRUE, Sc.D., Dean
G. N. LAUMAN, B. S. A., Registrar,
Ithaca, N. Y.



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